AMENDMENTS TO THE SPECIFICATION

Please amend the specification as indicated hereafter. It is believed that the following amendments and/or additions add no new matter to the present application.

Please replace the paragraph starting on p. 6, line 1 with the following amended paragraph:

The alignment system 10 comprises a lens 2, an optical sensor 3 and processing logic, which includes processing circuitry 4, a differential operational amplifier followed by an analog-to-digital converter (ADC) 5, a computer 6 and a memory element 7. The lens 2 may be, for example, a plano-convex lens. The lens 2 receives light projected from the end 11 as it propagates through optical waveguide 12 of the optical device under test (DUT) 13. As the light leaves the output 14 of the optical waveguide 12, the light forms a cone-shaped beam, which the lens 2 collimates ~~and~~ onto the optical sensor 3. The optical sensor 3 preferably is a photodiode. Many photodiodes that are suitable for this purpose are available in the market. Likewise, many different lenses and lens configurations that are suitable for performing the function of lens 2 (i.e., focusing the light onto the optical sensor 3) are available in the market.

Please replace the paragraph starting on p. 7, line 1 with the following amended paragraph:

The positioning of the optical sensor 3 is relative to the positioning of the lens 2. The positioning of the lens 2 is selected to achieve the desired field of view (FOV) of the output 14 of the optical waveguide 12. In Fig. 1, the optical DUT 13 is shown as having a single optical waveguide, and thus the lens 2 is positioned a particular distance away from the output 14 of the optical waveguide [[14]] 12 that provides it with a FOV that enables it to receive the cone-shaped beam from the output 14, collimate the beam, and focus it on the optical sensor 3.

Please replace the paragraph starting on p. 7, line 8 with the following amended paragraph:

Fig. 2 illustrates the alignment system 30 of the present invention in accordance with another embodiment in which the lens 22 has a FOV that enables it to view multiple (e.g., 5) optical waveguides 24-28 and to collimate and focus the light from each of the outputs 37 of the optical waveguides ~~31 — 35~~24-28. The optical sensor 23 may be, for example, a 1 to 5 millimeter (mm) photodiode, although it is not limited to any particular size or geometry. The optical sensor 23 preferably is a 3 millimeter InGaAs photodiode with a very low noise floor, as described in more detail below with reference to Fig. 5. Although the lenses 2 and 22 and the optical sensors 3 and 23 are shown in Figs. 1 and 2 as being more or less axially aligned with the outputs of the optical waveguides, this is not necessary and, in some cases, will not be the case. Also, the optical waveguides 12 and 24-28 are shown as being linear, which also is not necessary, and will not be true in all cases. The shapes of the optical waveguides will depend on their functions and on the nature of the optical device. The lenses 2 and 22 may be at an angle with respect to the sides of the optical devices 13 and 21 that are closest to the lenses 2 and 22 in order to provide the lenses 2 and 22 with a FOV that enables the lenses to "see" all of the outputs of all of the waveguides. Likewise, the optical sensors 3 and 23 may be offset to enable the light received by the lenses 2 and 22 to be focused onto the optical sensors 3 and 23. Essentially, the lens system and optical sensor ~~used~~ can be configured and positioned to enable an optical fiber end 11 to be aligned with multiple waveguide inputs by the alignment system of the present invention.

Please replace the paragraph starting on p. 10, line 19 with the following amended paragraph:

Alternatively, a pre-alignment algorithm may be performed for each DUT category using a DUT from each category. To accomplish this, signatures relating to the layers of the DUT are obtained and stored in memory element 7. The DUT is vertically scanned and the X, Y and Z coordinates are known at every position of the fiber end 11 and are stored in memory element 7. The double-headed arrow pointing from the motion control system 20 to the computer 6 is intended to indicated that the computer 6 receives these coordinates and stores them in memory element 7. At the

same time, the output of the optical sensor 3 and 23 is being measured and stored in memory element 7. The computer 6 uses all of this data to generate a one-to-one mapping between spatial position and ~~ouput~~output voltage. From this one-to-one mapping, a signature for each layer of the DUT can be obtained. The stored signatures may be compared with the signatures generated in real time when performing the vertical and horizontal scanning operations to determine when an optical waveguide has been found in a particular layer.

Please replace the paragraph starting on p. 11, line 15 with the following amended paragraph:

Fig. 5 is a schematic diagram of the processing circuitry 4 shown in Figs. 1 and 2 in accordance with an example embodiment. However, there are many ways in which the functions performed by the processing circuitry can be implemented. The processing circuitry 4 performs two primary functions, namely, filtering noise and providing the output signals from the optical sensor 3 and 23 with sufficient gain to be converted by the ~~OP-Amp/ADC~~op-amp/ADC 5 into a digital signal that is suitable for processing by the computer 6. However, the circuitry 4 shown in Fig. 5 has been specifically configured to 1) provide a wide dynamic range for the output of the optical sensor 3 and 23 so that voltage levels within a broad range can be digitized into high-resolution digital numbers that contain a large amount of meaningful information, 2) to provide a low noise floor, and 3) to eliminate or reduce noise in the optical sensor output signal and 4) to be capable of being implemented at low cost and with only one power supply.

Please replace the paragraph starting on p. 12, line 6 with the following amended paragraph:

The current output from the diode D1 is proportional to the amount of light impinging on the diode. The photodiode D1 is mounted in a housing (not shown) that prevents at least substantially all light, other than the light projected from the end 11 of the optical fiber, from impinging on it. The electrical processing circuit 4 comprises a transimpedance amplifier ~~52~~, which enables the amplifier 52 to convert current into voltage. The output of the diode is an electrical current that is converted by the amplifier 52 into a voltage signal. The output of the photodiode D1 is

connected to the inverting terminal of the amplifier 52. The amplifier 52 produces a voltage that is proportional to the current output from the photodiode D1. That output voltage is produced when the D1 current flows through the feedback resistor R1 to the output. The value of R1 may be, for example, 10, 000 ohms (10 KΩ). The capacitor, C1, in the feedback loop provides stability and prevents the output of the amplifier 52 from oscillating by filtering out high frequency noise. The value of C1 may be, for example, 100 Picofarads (pF).

Please replace the paragraph starting on p. 12, line 20 with the following amended paragraph:

The output voltage of the amplifier 52 passes through a resistor R3, which may be, for example, 1.6 KΩ. After the resistor R3, there is a parallel capacitor, C3, to ground. The value of the capacitor C3 may be, for example, 0.1 pF. This capacitor acts as a lowpass filter, which filters noise out of the output signal at the "Output +" terminal. The diode D2 provides a second reference voltage at the positive terminal of the amplifier 52, which eliminates the need for a second power supply for the amplifier. The reference voltage provided by D2 may be, for example, 1.235 volts. Thus, the circuit 4 utilizes a single 5 volt power supply 51 for the amplifier 52. The negative voltage supply terminal ~~55~~ is tied to ground, as shown. By biasing the reference voltage at the positive input terminal of the amplifier 52 up by 1.235 volts, the inputs of the amplifier 52 are prevented from being at the positive and/or negative rails of the amplifier 52, which is desirable for this particular amplifier 52 and for this particular implementation of the electrical processing circuitry 4. If the supplies of the amplifier 52 were allowed to go to the positive and negative rails, noise would be injected into the output signal of the amplifier and some linearity would be lost.